

What is claimed is:

1. A free space optics communication apparatus which performs communication with another apparatus with light beams, comprising:

a plurality of light-emitting units, each of the units emitting a light beam which forms a generally elliptical irradiation pattern on the other apparatus,

wherein the plurality of light-emitting units are set such that irradiation patterns of light beams from at least two of the plurality of light-emitting units partially overlap at a light-receiving unit of the other apparatus, and a width of a combined irradiation pattern formed by combining the light beams from the plurality of light-emitting units in a shorter diameter direction of an irradiation pattern of a light beam from one of the plurality of light-emitting units is 1.5 times or more larger than a width in the shorter diameter direction of the irradiation pattern of the light beam from the one light-emitting unit.

2. The free space optics communication apparatus according to claim 1, wherein the plurality of light-emitting units are set such that the width of the combined irradiation pattern formed at the light-receiving unit by combining the light beams from the plurality of light-emitting units in the shorter diameter direction of the irradiation pattern of the light beam from the one light-emitting unit is 2 times or more larger than the width of the irradiation pattern of the light beam from the one light-emitting unit.

3. The free space optics communication apparatus according to claim 1, wherein the plurality of light-emitting units are set such that the irradiation patterns of the light beams from the plurality of light-emitting units at the light-receiving unit overlap in the shorter diameter direction of the irradiation pattern of the light beam from the one light-emitting unit.

4. The free space optics communication apparatus according to claim 1, wherein the plurality of light-emitting units emit light beams toward the other apparatus such that longer diameter direction axes of irradiation patterns of light beams from at least two of the plurality of light-emitting units intersect at the light-receiving unit.

5. The free space optics communication apparatus according to claim 1, wherein each of the light-emitting units includes a light source and an optical system which condenses light emitted from the light source.

6. The free space optics communication apparatus according to claim 1, wherein the light source is a semiconductor laser.

7. A free space optics communication system comprising:
the free space optics communication apparatus according to claim 1; and
another apparatus which has a light-receiving unit which

receives light beams irradiated from the free space optics communication apparatus.

8. A transmission apparatus which transmits information to a reception apparatus through light beams, comprising:

a first light-emitting unit and a second light-emitting unit each emitting a light beam, the light beam having an angle of divergence;

wherein a first direction in which the light beam emitted from the first light-emitting unit is inclined by an angle smaller than the angle of divergence with respect to a second direction in which the light beam emitted from the second light-emitting unit.

9. The transmission apparatus according to claim 8, wherein the light beam has a cross section of generally elliptical shape, and

the first direction is inclined by an angle smaller than the angle of divergence in a shorter diameter direction of the generally elliptical shape with respect to the second direction.

10. The transmission apparatus according to claim 8, further comprising a light-receiving unit which receives a light beam emitted from the reception apparatus.

11. A transmission apparatus which transmits information to a reception apparatus through light beams, comprising:

a first light-emitting unit and a second light-emitting unit each emitting a light beam, the light beam having a cross section

of generally elliptical shape;

wherein a first shorter diameter direction of the generally elliptical shape of the cross section of the light beam from the first light-emitting unit is inclined with respect to a second shorter diameter direction of the generally elliptical shape of the cross section of the light beam from the second light-emitting unit.

12. The transmission apparatus according to claim 11, wherein the first shorter diameter direction is inclined generally 90 degrees with respect to the second shorter diameter direction.

13. The transmission apparatus according to claim 11, further comprising a light-receiving unit which receives a light beam emitted from the reception apparatus.

14. A communication system which performs communication with light beams, comprising:

a transmission apparatus which includes a first light-emitting unit and a second light-emitting unit each emitting a light beam, the light beam having an angle of divergence,

wherein a first direction in which the light beam emitted from the first light-emitting unit being inclined by an angle smaller than the angle of divergence with respect to a second direction in which the light beam emitted from the second light-emitting unit; and

a reception apparatus which includes a light-receiving unit

which receives the light beams from the first light-emitting unit of the transmission apparatus and from the second light-emitting unit of the transmission apparatus.

15. A communication system which performs communication with light beams, comprising:

a transmission apparatus which includes a first light-emitting unit and a second light-emitting unit each emitting a light beam, the light beam having a cross section of generally elliptical shape,

wherein a first shorter diameter direction of the generally elliptical shape of the cross section of the light beam from the first light-emitting unit being inclined with respect to a second shorter diameter direction of the generally elliptical shape of the cross section of the light beam from the second light-emitting unit; and

a reception apparatus which includes a light-receiving unit which receives the light beams from the first light-emitting unit of the transmission apparatus and from the second light-emitting unit of the transmission apparatus.

16. An apparatus which transmits information by directing light beams through a free space, comprising:

a plurality of light-emitting units, each of the units having an optical axis and emitting a light beam which has a cross section having a shorter side direction, and the plurality of light-emitting units including a first light-emitting unit and a

second light-emitting unit, the first light-emitting unit having an optical axis inclined with respect to an optical axis of the second light-emitting unit such that the optical axes are separated from each other in the shorter side direction.

17. The apparatus according to claim 16, wherein the cross section is an elliptical shape, the plurality of light-emitting units includes a third light-emitting unit and a fourth light-emitting unit, the third light-emitting unit having an optical axis inclined with respect to an optical axis of the fourth light-emitting unit such that the optical axes are separated from each other in the shorter side direction, and the shorter side directions of the light beams from the third and fourth light-emitting units are the same as or orthogonal to the shorter side directions of the light beams from the first and second light-emitting units.

18. An apparatus which transmits information by directing light beams through a free space, comprising:

a plurality of light-emitting units, each of the units having an optical axis and emitting a light beam which has a cross section having a shorter side direction, and the plurality of light-emitting units including a first light-emitting unit and a second light-emitting unit which emit light beams with the shorter side directions different from each other.

19. The apparatus according to claim 18, wherein the cross

section is an elliptical shape, and the plurality of light-emitting units includes a third light-emitting unit and a fourth light-emitting unit which emit light beams with the shorter side directions different from each other and different from the shorter side directions of the light beams emitted from the first and second light-emitting units.